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OPPORTUNITY AS IT IS RELATED TO HOME BACKGROUND AND SCHOOL PERFORMANCE.

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THE RELATIONSHIP BETWEEN OPPORTUNITY TO LEARN AND SUCCESS IN ACADEMIC ACHIEVEMENT IN SIX COUNTRIES WAS STUDIED. A SECONDARY CONCERN WAS THE EXTENT OF OPPORTUNITY AFFORDED TO STUDENTS FROM ADVANTAGED HOME BACKGROUNDS AS COMPARED TO THOSE AFFORDED TO DISADVANTAGED STUDENTS. THE DATA BANK OF THE INTERNATIONAL PROJECT FOR THE EVALUATION OF EDUCATIONAL ACHIEVEMENT (I.E.A.) PROVIDED INFORMATION ON THE SAMPLE GROUP WHICH WAS COMPOSED OF 13 YEAR OLD STUDENTS FROM THE DIFFERENT COUNTRIES. OPPORTUNITY TO LEARN WAS THE DEPENDENT VARIABLE IN EACH ANALYSIS IN EACH COUNTRY. RESULTS OF THE STUDY INDICATED THAT BASED ON SCHOOL PERFORMANCE, SUCCESSFUL STUDENTS IN ALL COUNTRIES EXCEPT JAPAN HAD BEEN GIVEN GREATER OPPORTUNITY TO LEARN. IN JAPAN, ALL STUDENTS WERE GIVEN EQUAL OPPORTUNITY TO LEARN. MOREOVER, DISADVANTAGED STUDENTS ARE NOT GIVEN THE SAME OPPORTUNITY TO LEARN AS ARE ADVANTAGED STUDENTS IN FOUR OF THE COUNTRIES, JAPAN AND SWEDEN BEING THE EXCEPTIONS. THE WAY HOME BACKGROUND AND SUCCESS IN SCHOOL WERE MEASURED, PARTICULARLY SINCE SUCCESS WAS CONFINED TO MATHEMATICAL ACHIEVEMENT AND INTEREST, WERE LIMITATIONS OF THE STUDY. THE CONCLUSIONS INDICATE A NEED FOR FURTHER RESEARCH WHICH MEASURES OPPORTUNITY TO LEARN AS A PROCESS VARIABLE. THIS STUDY WAS REPORTED AT THE ANNUAL MEETING OF THE AMERICAN EDUCATIONAL RESEARCH ASSOCIATION (CHICAGO, FEBRUARY 8, 1968). (CG)

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Opportunity as It Is Related to Home Background and School Performance[1]

Introduction

One of the major problems, if not the major problem, confronting the educational researcher, is an understanding of the nature of inequities in educational opportunity and achievement. The acquisition of this understanding, and its immediate application have become primary objectives for many of us involved with education. Stated simply, the issue of concern is that, if all students are to succeed in some way in school, then each must be afforded the educational opportunity to do so.

The study reported here represents an attempt to further understand the problem of the relationship between achievement and opportunity, not just here in the United States, but in other countries as well. The foremost purpose of this study was to determine the extent to which the opportunity afforded the successful students within each of six countries differed from that afforded the nonsuccessful students in that country.

Additionally, we know from such major works as those by Bloom, et al. (1965) and Coleman, et al. (1966), among others here in the United States, that opportunity is related not only to school performance but to the home background of the students as well. In the Coleman report (1966), it was concluded that what children in the United States bring to school with them accounts for more of the variation in their achievement than any other factor, including global estimates of their

opportunities in school, though opportunity was significantly related to achievement. Thus, a further purpose of this study was to determine the extent to which the opportunity afforded the students from advantaged home backgrounds within each country differed from that afforded the disadvantaged students in that country.

One additional purpose, of no lesser importance than the others, was to explore the implications of studying educational opportunity as a process rather than with the usual measures of opportunity, namely, pupil-teacher ratio, expenditure per pupil on teaching, and the like as was done by Coleman (1966, 1967). The procedure used in this study to measure the variable opportunity, was an attempt to measure educational opportunity as a process.

Before turning to a discussion of the procedures of the study I should like to emphasize at this time that the focus of this study was on specific group differences within each of the countries, not on the differences between countries. Insofar as possible, the conclusions of the study were reached only after generalizations were drawn from the results of the analyses within each country.

Procedures

The nature of the problem posed necessitated an international data source with extensive information on a large number of students. These requisites were satisfied through the use of the data bank of the International Project for the Evaluation of Educational Achievement (I.E.A.).

The data bank resulted from a recent international study of achievement in mathematics (Husén, 1967). This bank yielded information relevant to the purposes of this study on over 130,000 students in 12 countries. With these data it was possible to secure appropriate and sufficient estimates of the students' home background, school performance, and educational opportunity.

Educational opportunity

Opportunity was measured as a process by quantifying the teachers' perceptions of the students' opportunities to study a particular topic in mathematics. The teachers had been asked to judge the extent to which their group of students were afforded an opportunity to learn to solve the types of problems presented by the mathematics achievement test administered to the students. Each teacher rated all of the 70 test items as to their appropriateness for his group of students. For each item, the response alternatives available to the teacher were as follows: (a) all or most, at least 75%, of this group of students had an opportunity to learn this type of problem, (b) some, 25% to 75%, of this group had an opportunity to learn this type of problem, and (c) few or none, under 25%, had such an opportunity. The teacher's ratings were then scaled by assigning a value of 87.5% to the first alternative, a value of 50% to the second alternative, and a value of 12.5% to the third. The ratings given by a teacher to each of the 70 items in the test taken by his students were averaged. Thus, for each teacher this was a measure of

the opportunity his students had been afforded to learn the content covered in the mathematics achievement test. This score was assigned to each of his students, and it was interpreted as that percentage of the content of the mathematics test which the student had the opportunity to study.

Home background

As an indicator of the student's home background the educational levels of his parents and the status of the occupation of his father, taken in combination, were used. These variables are ones traditionally used to estimate home background. The educational levels were number of years of education completed by each parent; the status of the father's occupation was represented by a coded occupational scale consisting of seven ordinal categories.

School performance

A cognitive variable, mathematics achievement, and an affective variable, interest in mathematics, also in combination, were used as an indicator, albeit gross, of performance in school. The achievement level for a student was his corrected score on the 70-point mathematics achievement test. The variable, interest in mathematics, was an 11-point index, derived from the student's desired occupation and his interest and grades in mathematics (Husén, 1967, Vol. I, p. 212). The larger scores on this index were interpreted as reflecting more interest in mathematics.

Samples

The samples of this study were 13-year-old students in six countries, the United States, England, France, Japan, Scotland, and Sweden. In these countries, nearly all 13-year-olds are still in school. From the representative national samples in the I.E.A. Data Bank, the samples for this study were drawn selectively, using the multiple criteria: father's education, mother's education, status of father's occupation, mathematics achievement and interest in mathematics. To illustrate the selection process, in the United States, the advantaged students who were selected were those students both of whose parents had completed at least 13 years of education and whose fathers were in occupations in the four highest-status occupational classes. The disadvantaged students were those students whose parents both had completed no more than 10 years of education and whose fathers had occupations in the three lowest-status occupational classes. Within these two groups, the advantaged students and the disadvantaged students, the successful and nonsuccessful students were selected. The successful students were those students who had achieved a score of 16.25 or higher on the 70-point mathematics test and a score of 7 or more on the interest in mathematics index. The nonsuccessful students who were selected were those students who had a mathematics achievement score of 16.00 or less and also a score of no more than 6 on the interest index. The application of the process resulted in the formation of four groups of 13-year-olds; the advantaged-successful, the advantaged-nonsuccessful, the disadvantaged-successful,

and the disadvantaged-nonsuccessful.

This process was repeated for each of the remaining five countries. The criteria for selecting the groups of students were adjusted, however, for each of the countries, in that the cutoff points on each of the five selection criterion variables were varied from country to country. Such adjustments were necessary to assure that, with respect to all other students in their country, only those students who were distinctly advantaged or disadvantaged and who were either the most successful or nonsuccessful were included for study. The selection criteria used in each of the countries are summarized in Table 1. Also included in this table is the number in each of the four groups within each of the six countries.

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Insert Table 1 about here

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Method of analysis

In the statistical analysis for each country, home background, either advantaged or disadvantaged, was crossed with school performance, either successful or nonsuccessful. An exact two-way univariate analysis of variance for nonorthogonol designs was performed to test these main effects in each country. The method of analysis developed by Bock (1963) and programmed for the computer by Finn (1967) was used. The estimate of error in the analyses was the pooled within cell variation. Opportunity to learn was the dependent variable in each of the analyses in each of the countries.

TABLE 1

SUMMARIZATION OF THE CRITERIA USED TO SELECT THE FOUR GROUPS IN EACH COUNTRY

Group Within Country	N	Father's Education	Mother's Education	Status of Father's Occupation	Mathematics Achievement Score	Interest In Mathematics Score
United States						
Advantaged-Successful	283	13 years or more	13 years or more	4 or lower	16.25 or higher	7 or higher
Advantaged-Nonsuccessful	94	13 years or more	13 years or more	4 or lower	16.00 or lower	6 or lower
Disadvantaged-Successful	89	10 years or less	10 years or less	5 or higher	16.25 or higher	7 or higher
Disadvantaged-Nonsuccessful	212	10 years or less	10 years or less	5 or higher	16.00 or lower	6 or lower
England						
Advantaged-Successful	413	10 years or more	10 years or more	4 or lower	19.50 or higher	6 or higher
Advantaged-Nonsuccessful	37	10 years or more	10 years or more	4 or lower	19.25 or lower	5 or lower
Disadvantaged-Successful	139	9 years or less	9 years or less	5 or higher	19.50 or higher	6 or higher
Disadvantaged-Nonsuccessful	135	9 years or less	9 years or less	5 or higher	19.25 or lower	5 or lower
France						
Advantaged-Successful	229	8 years or more	8 years or more	4 or lower	18.50 or higher	6 or higher
Advantaged-Nonsuccessful	79	8 years or more	8 years or more	4 or lower	18.25 or lower	5 or lower
Disadvantaged-Successful	74	7 years or less	7 years or less	5 or higher	18.50 or higher	6 or higher
Disadvantaged-Nonsuccessful	87	7 years or less	7 years or less	5 or higher	18.25 or lower	5 or lower

TABLE 1 (CONTINTUED)

SUMMARIZATION OF THE CRITERIA USED TO SELECT THE FOUR GROUPS IN EACH COUNTRY

Group Within Country	N	Father's Education	Mother's Education	Status of Father's Occupation	Mathematics Achievement Score	Interest in Mathematics Score
Japan						
Advantaged-Successful	150	9 years or more	9 years or more	4 or lower	31.25 or higher	7 or higher
Advantaged-Nonsuccessful	46	9 years or more	9 years or more	4 or lower	31.00 or lower	6 or lower
Disadvantaged-Successful	95	8 years or less	8 years or less	5 or higher	31.25 or higher	7 or higher
Disadvantaged-Nonsuccessful	150	8 years or less	8 years or less	5 or higher	31.00 or lower	6 or lower
Scotland						
Advantaged-Successful	397	9 years or more	9 years or more	4 or lower	19.25 or higher	6 or higher
Advantaged-Nonsuccessful	155	9 years or more	9 years or more	4 or lower	19.00 or lower	5 or lower
Disadvantaged-Successful	21	8 years or less	8 years or less	5 or higher	19.25 or higher	6 or higher
Disadvantaged-Nonsuccessful	41	8 years or less	8 years or less	5 or higher	19.00 or lower	5 or lower
Sweden						
Advantaged-Successful	229	7 years or more	7 years or more	4 or lower	15.75 or higher	6 or higher
Advantaged-Nonsuccessful	69	7 years or more	7 years or more	4 or lower	15.50 or lower	5 or lower
Disadvantaged-Successful	120	6 years or less	6 years or less	5 or higher	15.75 or higher	6 or higher
Disadvantaged-Nonsuccessful	203	6 years or less	6 years or less	5 or higher	15.50 or lower	5 or lower

Results

The means and standard deviations on opportunity to learn for each group within country are presented in Table 2. Use is made of these summary statistics, particularly the trends which are in evidence, in interpreting the results of the analyses of variance which follow.

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Insert Table 2 about here
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In each country, the test of the effect of school performance, contrasting the opportunity of the successful students with that of the nonsuccessful students, with the effect of home background removed, was considered to be the test of the central problem of the study. To reiterate this problem: to what extent does the opportunity to learn afforded the successful students differ from that afforded the nonsuccessful students? In the tests of the effect of school performance, it was found, in fact, that the successful students in the United States, England, France, Scotland, and Sweden had been afforded greater opportunity than the nonsuccessful students to learn the mathematics covered by the achievement test. The complete results of these tests are presented in Table 3. The main effect, school performance, was ordered last in each of the analyses to obtain unbiased estimates of this effect.

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Elaborating on these results, in the United States, the successful students had been afforded the opportunity to learn more than half of the

TABLE 2

DESCRIPTIVE STATISTICS FOR EACH GROUP, BY COUNTRY, ON THE STUDENT'S OPPORTUNITY TO LEARN (READ AS A PERCENTAGE)

Country	Group							
	Advantaged Successful		Advantaged Nonsuccessful		Disadvantaged Successful		Disadvantaged Nonsuccessful	
	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S	$\bar{X}$	S
United States	54.66	13.71	50.68	14.48	49.73	12.98	44.71	11.74
England	70.46	9.03	56.87	18.86	61.84	14.38	47.68	17.97
France	60.00	12.31	54.53	12.99	48.16	9.67	43.12	8.48
Japan	63.04	5.54	62.90	6.93	63.67	6.09	63.58	6.06
Scotland	66.96	9.09	45.85	13.50	59.51	11.41	44.53	15.16
Sweden	39.57	8.49	37.57	8.38	38.94	9.48	37.44	9.62

TABLE 3

UNIVARIATE ANALYSES OF VARIANCE OF THE EFFECT OF SCHOOL PERFORMANCE IN EACH COUNTRY

Source of Variation	Mean Square Between Groups	d.f.	Univariate F
United States			
Home Background	9347.48	1/674	65.02**
School Performance	2661.11	1/674	18.51**
Home X School	35.92	1/674	0.25
England			
Home Background	35681.72	1/720	243.79**
School Performance	19988.84	1/720	136.57**
Home X School	7.42	1/720	.05
France			
Home Background	18301.31	1/465	162.31**
School Performance	2763.65	1/465	24.51**
Home X School	4.31	1/465	.04
Japan			
Home Background	40.39	1/437	1.15
School Performance	1.18	1/437	.03
Home X School	.07	1/437	.00
Scotland			
Home Background	7282.10	1/610	64.90**
School Performance	52342.26	1/610	466.49**
Home X School	463.92	1/610	4.13
Sweden			
Home Background	192.46	1/617	3.20
School Performance	373.50	1/617	6.20*
Home X School	7.67	1/617	.13

* $P < .05$
** $P < .01$

content covered while the nonsuccessful students had been afforded the opportunity to learn less than half. In all countries except Japan, the advantaged-successful students were afforded more opportunity to learn than any of the other three groups of students. In Japan, the nonsuccessful students had been afforded the same opportunity as the successful students, the opportunity to learn more than 60% of the content covered in the test. These trends can be observed in the group statistics for each country given in Table 2.

Though the effect of school performance was of primary interest, the effect of home background, eliminating the effect of school performance, was also tested in each of the countries. In each of these analyses the main effect, home background, was ordered last to obtain unbiased estimates of this effect. Because the interaction between opportunity to learn was nonsignificant in each analysis, this effect was not included in these analyses. The results of the tests of the effect of home background are presented in Table 4.

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Insert Table 4 about here
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In four of the countries, the United States, England, France, and Scotland, the students from advantaged home backgrounds had been afforded a greater opportunity to learn the mathematics content than that afforded the students from disadvantaged home backgrounds. In Sweden and Japan, such was not the case. In these two countries, the disadvantaged students had been afforded the same opportunity as that afforded the advantaged students. Such trends are reflected in the summary

TABLE 4

UNIVARIATE ANALYSES OF VARIANCE OF THE EFFECT OF HOME BACKGROUND IN EACH COUNTRY

Source of Variation Within Countries	Mean Square Between Groups	d.f.	Univariate F
United States			
School Performance	8077.72	1/674	56.18**
Home Background	3930.88	1/674	27.34**
England			
School Performance	45505.88	1/720	310.92**
Home Background	10164.69	1/720	69.45**
France			
School Performance	7844.76	1/465	69.57**
Home Background	13220.20	1/465	117.24**
Japan			
School Performance	1.95	1/437	.06
Home Background	39.62	1/437	1.13
Scotland			
School Performance	58924.67	1/610	525.16**
Home Background	699.69	1/610	6.24*
Sweden			
School Performance	541.04	1/617	8.98**
Home Background	24.92	1/617	.41

* $P < .05$
** $P < .01$

statistics in Table 2.

Discussion

A major conclusion of this study is that nonsuccessful students, for the most part, are not given the opportunities to learn afforded successful students. This conclusion is supported by the results of the analyses in five out of the six countries, namely in the United States, England, France, Scotland, and Sweden. Moreover, a second conclusion is that disadvantaged students are most often not given the opportunities to learn that are afforded advantaged students. This conclusion is supported by the results of the analyses in four out of the six countries, in the United States, England, France, and Scotland. In Sweden, the disadvantaged students had been afforded the same opportunity as the advantaged students. In Japan, where all students had been afforded equal opportunity to learn, neither of the above conclusions was supported.

To offer one plausible explanation for these two exceptions, the lack of relationship between home background and opportunity could be explained by the homogeneity of the educational program offered within each country, since both Sweden and Japan have a centralized core curriculum for all students through at least age 13. It is worthy of note that this explanation was offered by the I.E.A. (Husén, 1967, Vol. II; p. 299) for the lack of relationship between achievement and educational opportunity in those countries where there is a national centralized curriculum. Furthermore, in Japan, this explanation would account for the lack of relationship between success in school and

educational opportunity, which, in turn, implies that the differences between the successful students and the nonsuccessful students in Japan are attributable to something other than inequities in educational opportunities. Any further extrapolations, however, would not be within the circumference of the results of this study. The full explanation will have to come from the results of future research.

The aforementioned conclusions have decided implications for educational practices in the school systems of all countries which were studied. The opportunities to learn which are afforded the advantaged-successful students are not generally offered to all students. While the possibility remains that all students will not be able to benefit from such opportunities, the opportunities which were offered the advantaged-successful students should be offered to all students if success for most is valued. A quite similar contention has been offered by Postlethwaite (1967, p. 130), in discussing the nature of the relationship between success in school and educational opportunity.

One further conclusion reached is that the definitiveness of the results of this study are attributable, to a great extent, to the way in which the variable, opportunity to learn, was measured. Measuring opportunity as a process variable appears to contribute much to our understanding of the nature and implications of educational opportunity, and serious consideration should be given to this measurement procedure in studies that are, hopefully, generated from this one.

In generalizing from the results of this study, there are certain

cautions to be acknowledged. Socioeconomic status characteristics were used as indicators of home background rather than variables which reflect the processes which are occurring in the homes (cf. Wolf, 1963 and Dave, 1963). Furthermore, only mathematics achievement and interest in mathematics were used as indicators of success in school, suggesting a need to replicate this study but including other dimensions of school performance.

In spite of the limitations of this inquiry, the major conclusion of this study remains viable: educational opportunity is related to performance in school and to the effect of one's home background, not just here in the United States but in many other countries as well. The problem of the inequities in educational opportunity remains an international problem as well as a national problem.

FOOTNOTES

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